SCAMPI Planning with Version 1.3

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LOCKHEED MARTIN

Agenda

- **Overview of Organization**
- **Getting Started**
- **Sampling Factors**
- **Sub-Groups**
- **Support Functions**
- **End Result – So Far**
- **Lessons Learned**

Overview of Organization

- **Information Systems and Global Solutions (IS&GS) – Business Area within Lockheed Martin Corporation**
  - **IS&GS-Defense Product Line**
    - **Employs over 12,000 people at more than 200 sites worldwide**
    - **Principally engaged in the design, development, operation and sustainment of systems and solutions that help defense customers achieve their missions.**
    - **Performs on more than 400 programs for customers that include the U.S. military services, NASA and the National Oceanic and Atmospheric Administration.**
    - **Performs Software Development , Operations and Maintenance, Information Technology Services, Engineering Services and General Site services.**

Getting Started

- **Not an easy thing to get a list of programs**
  - **What is a program? (vs. contract, CLIN, project)**
  - **Who would have the most current list?**
    - **And what would it include?**
- **Business Area (IS&GS) Enterprise Dashboard**
  - **Centralized portal that provides weekly insight into IS&GS programmatic and financial performance across programs and provides a consistent consolidated view of performance status**
  - **Programs over a certain $ amount required to report weekly**
    - **Others at discretion of management**
- **Used Enterprise Dashboard to get baseline list of programs**
  - **Already provides a limiting factor ($ value)!**
  - **Initial list included 132 programs**

Sampling Factors

Sampling factors serve to identify meaningful differences in the conditions under which work is performed in the organizational unit. Based on a thorough understanding of the organization, the lead appraiser determines the sampling factors that define different clusters of process implementation for the organization unit. Tiers of the organization chart often provide an initial view of these potential groupings. The Method Definition Document section 1.1.4 contains a list of potential sampling factors which must be evaluated. In addition, the lead appraiser seeks information about other potential sampling factors.

Standard CMMI® Appraisal Method for Process Improvement (SCAMPISM) A, Version 1.3: Method Definition Document, Appendix F, Page 212

Sampling Factors

- **What made sense as a differentiator – The organization's perspective:**
  - **All programs are required to follow a set of requirements, tailored for each program and documented in a compliance matrix**
    - **Regardless of Domain, Geography, Customer, Size or Life Cycle**
    - **Organizational tailoring was done for Program Type (e.g., development, services, operations/maintenance)**
    - **Requirements were specific for software, systems, hardware**
  - **Therefore, the organization felt that the following were process differentiators:**
    - **Discipline (i.e., software, systems, hardware)**
    - **Program Type (i.e., development, services, operations & maintenance – O&M)**
    - **Architecture Methodology (model-based or non-model based)**
    - **$ Value (default from program list obtained)**
  - **Provided this information to the Lead Appraiser for review / comment**

Sampling Factors (2)

- **What made sense as a differentiator – The Lead Appraiser's perspective:**
  - Additional information requested for:
    - % of contracts that were with Defense customers (92%)
    - Lines of Business within the organization (3 of the 5 with development or O&M effort included in scope)
  - Agreed the following were not differentiators
    - Domain, Geography, Customer and Life Cycle
    - Did not agree that size was not a differentiator
  - Lead Appraiser felt that the following were process differentiators:
    - Discipline (i.e., software, systems, hardware)
    - Program Type (i.e., development, services, O&M)
    - Architecture Methodology (model-based or non-model based)
    - Size (Full-Time Equivalents)

Subgroups

Sampling factors are used to define subgroups in the organizational unit. Subgroups consist of sets of basic units which share the attributes identified by the sampling factors. Subgroups are defined by determining all potential combinations for each value of the sampling factors.

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Sub-Groups

- **First Pass:**
  - **19 Sub-groups defined based on Discipline, Program Type, and Architecture Methodology (called Project type)**

Subgroup	Relevant Sampling Factors
	Disciplines / Effort Types / Project Types
D1	H/W O&M
D2	Integration
D3	O&M Pass-thru, Production
D4	PM Only
D5	Production
D6	Research
D7	SW & HW O&M
D8	SE & SW / Development / non-model based
D9	SE & SW & HW / Development / model based
D10	SE & SW & HW / Development / non-model based
D11	SE & SW & HW / O&M
D12	Services
D13	SW & HW / Development / model based
D14	SW & SE / Development / model based
D15	SW & SE / O&M
D16	SW & SE/Dev - IDIQ
D17	SW / Development / model based
D18	SW / O&M
D19	T & M

Sub-Groups (2)

- **Slice & Dice:**
  - **Select only those programs that were Development or O&M**
  - **12 Sub-Groups remaining**

Subgroup	Relevant Sampling Factors
	Disciplines / Effort Types / Project Types
D1	H/W O&M
~~D2~~	~~Integration~~
~~D3~~	~~O&M Pass-thru, Production~~
~~D4~~	~~PM Only~~
~~D5~~	~~Production~~
~~D6~~	~~Research~~
D7	SW & HW O&M
D8	SE & SW / Development / non-model based
D9	SE & SW & HW / Development / model based
D10	SE & SW & HW / Development / non-model based
D11	SE & SW & HW / O&M
~~D12~~	~~Services~~
D13	SW & HW / Development / model based
D14	SW & SE / Development / model based
D15	SW & SE / O&M
D16	SW & SE/Dev - IDIQ
D17	SW / Development / model based
D18	SW / O&M
~~D19~~	~~T & M~~

Sub-Groups (3)

- **Slice & Dice:**
  - **Select only those programs that were multi-disciplined (with at least Systems Engineering for RD)**
  - **6 Sub-Groups remaining**

Subgroup	Relevant Sampling Factors Disciplines / Effort Types / Project Types
D1	H/W O&M
D2	Integration
D3	O&M Pass-thru, Production
D4	PM Only
D5	Production
D6	Research
D7	SW & HW O&M
D8	SE & SW / Development / non-model based
D9	SE & SW & HW / Development / model based
D10	SE & SW & HW / Development / non-model based
D11	SE & SW & HW / O&M
D12	Services
D13	SW & HW / Development / model based
D14	SW & SE / Development / model based
D15	SW & SE / O&M
D16	SW & SE/Dev - IDIQ
D17	SW / Development / model based *
D18	SW / O&M
D19	T & M

* Found out this wasn't a real "program" – no task orders

Sub-Groups (4)

- **Slice & Dice:**
  - **Select only those development programs that used model-based architecture design (keeping O&M)**
  - **4 Sub-Groups remaining**

Subgroup	Relevant Sampling Factors
	Disciplines / Effort Types / Project Types
D1	H/W O&M
D2	Integration
D3	O&M Pass-thru, Production
D4	PM Only
D5	Production
D6	Research
D7	SW & HW O&M
D8	SE & SW / Development / non-model based
D9	SE & SW & HW / Development / model based
D10	SE & SW & HW / Development / non-model based
D11	SE & SW & HW / O&M
D12	Services
D13	SW & HW / Development / model based
D14	SW & SE / Development / model based
D15	SW & SE / O&M
D16	SW & SE/Dev - IDIQ
D17	SW / Development / model based
D18	SW / O&M
D19	T & M

Sub-Groups (5)

- **Reviewed again by the Lead Appraiser:**
  - **This is when he determined that Size was also a factor!**

- **Start all over again?**
- **Not necessary – took the remaining sub-groups and created sub-sub-groups based on size:**
  - **< 50 Full Time Equivalents (FTEs)**
  - **50 – 100 FTEs**
  - **> 100 FTEs**
- **BUT this resulted in 14 programs having to be sampled**

Subgroup	Relevant Sampling Factors
	Disciplines / Effort Types / Project Types / *Size*
D9	SE & SW & HW / Development / model based
D9.1	< 50 FTE
D9.2	50 - 100 FTE
D9.3	> 100 FTE
D11	SE & SW & HW / O&M
D11.1	< 50 FTE
D11.2	50 - 100 FTE
D11.3	> 100 FTE
D14	SW & SE / Development / model based
D14.1	< 50 FTE
D14.2	50 - 100 FTE
D14.3	> 100 FTE
D15	SW & SE / O&M
D15.1	< 50 FTE
D15.2	50 - 100 FTE
D15.3	> 100 FTE

Sub-Groups (6)

- **One more change in scope:**
  - **Programs with > 50 FTEs**

- **Some of the remaining sub-sub-groups did not have any programs that fit within that sub-sub-group**

Subgroup	Relevant Sampling Factors
	Disciplines / Effort Types / Project Types / *Size*
D9	SE & SW & HW / Development / model based
D9.1	< 50 FTE
D9.2	50 - 100 FTE
D9.3	> 100 FTE
D11	SE & SW & HW / O&M
D11.1	< 50 FTE
D11.2	50 - 100 FTE
D11.3	> 100 FTE
D14	SW & SE / Development / model based
D14.1	< 50 FTE
D14.2	50 - 100 FTE
D14.3	> 100 FTE
D15	SW & SE / O&M
D15.1	< 50 FTE
D15.2	50 - 100 FTE
D15.3	> 100 FTE

Sub-Groups (7)

- **Results**

Subgroup	Relevant Sampling Factors	Size of Sub-sub-group	Size * # Sub-sub-groups	(Size * # Sub-sub-groups) / # Programs	# Sampled
	Disciplines / Effort Types / Project Types / *Size*				
D9	**SE & SW & HW / Development / model based**				
D9.3	> 100 FTE	4	20	1.67	2
D11	**SE & SW & HW / O&M**				
D11.3	> 100 FTE	3	15	1.25	1
D14	**SW & SE / Development / model based**				
D14.2	50 - 100 FTE	3	15	1.25	1
D14.3	> 100 FTE	1	5	0.42	1
D15	**SW & SE / O&M**				
D15.3	> 100 FTE	1	5	0.42	1
Total Number Programs		12			6
Number of Sub-sub-groups	5				

- **6 Programs to be Sampled**
- **Evolved Appraisal Scope:**
  - **Model based architecture development or O&M only, Multi-Disciplined with at least Systems Engineering included, for programs of 50 or more Full-Time-Equivalent people**

Support Functions
Groups of people who perform work that enables or supports the work which is ultimately visible to the customers of the organization.

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Support Functions

- **Looked across the organization's structure to see what could be defined as a "Support Function"**
  - Quality – independent from the programs
  - Subcontracts – all follow Corporate guidelines and procedures
  - Organizational groups
- **Received additional questions from the Lead Appraisers:**
  - Provide information on reporting and reviews for Quality activities
  - What type of supplier agreements exist
- **Worked with the organization to obtain additional information**

Support Functions (2)

- **Quality was defined to be a Support Function**
  - **Different reporting structure from Program Management**
  - **Monthly Operating Review by Quality manager**
    - **Covers key accomplishments, disappointments, past 30 days activity, future 30 day activity, audits, corrective actions, prevention measures, etc.**
  - **Quality Plans had already been established on the programs**
    - **Quality manager participates in yearly program reviews, reviewing the Quality Plans to ensure they are up-to-date and are being followed**
- **Although this could have limited evidence collection, all the programs decided to provide PPQA evidence as part of their preparation for the SCAMPI A!**

Support Function (3)

- **Subcontracts was not defined to be a Support Function**
  - **Corporate terms were not the same as model terms**
    - **Difficult to explain to participants**
    - **Difficult to explain to Lead Appraiser**
  - **Different levels and combinations of supplier activities**
    - **From standard COTS purchases to full subcontract management**
- **Could have pushed to make this a support function because of the consistency across the organization**
  - **But it was "too hard"!**

End Result – So Far

- **Sampling Factors have been identified**
  - **Modified the original organizational scope**
  - **Several iterations with Lead Appraiser required**
    - **To understand model perspective**
    - **To understand organization**
- **Programs have been identified**
  - **5 programs to provide full PIID evidence (except PPQA)**
  - **2 programs to provide 2 or 3 PAs**
  - **Quality organization to provide PPQA evidence from one of the programs**
- **Data Coverage Plan completed**
  - **Team review of evidence completed**

End Result – So Far (2)

- **Would it have been the same under V1.2?**
  - **It depends**
  - **In the past (under V1.1 and V1.2):**
    - **Identified minimum of 3 programs that provided 45 – 50% of sales and people**
      - **Typically, the biggest programs**
    - **In addition, would identify 5 – 10 programs that would prepare evidence to be "sampled" if the appraisal team wanted additional institutionalization evidence**
    - **8 – 13 programs preparing full sets of evidence**
  - **Probably would have identified some of the same programs**
    - **But only 5 programs providing full sets of evidence and 2 more providing 2 – 3 process areas**

Lessons Learned

- **SCAMPI V1.3 takes more effort in up-front planning**
- **SCAMPI V1.3 required earlier involvement by Lead Appraiser**
  - **Lead needs to really _understand_ the organization**
  - **Lead needs to be responsive to questions / issues raised by organization so that the "slicing and dicing" proceeds quickly**
  - **Organization needs to be responsive to questions from the Lead**
- **This organization's programs are risk-averse**
  - **Even when they don't have to provide evidence, they do anyway**
    - **Just in case**
    - **So they won't have to do something at the last minute**

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Questions??